

## **UIAA Medical Commission**

### Factsheet on Sport Climbing

#### **Are there any vitamin and mineral supplements that will improve climbing performance?**

You are what you eat. Such supplements are normally not necessary when eating a varied and balanced diet. Some climbers (especially elite climbers) eat restrictive and low energy diets. If the diet is not varied and/or major food groups are excluded (i.e. dairy, meat, fruit/vegetables), deficiencies in both vitamins and minerals are likely.

During periods of high-intensity training, if a proper and adequate diet is not eaten to maintain body weight, this can result in loss of muscle mass, loss or failure to gain bone density, menstrual dysfunction, and increase the risk of fatigue, illness and injury.

Get the basics right first with your diet and hydration before even considering supplements to see if they are really necessary. If possible, get a sport nutritionist or dietician's help to accommodate your specific needs and goals. Those under 18 years, pregnant, or who have pre-existing health problems should seek a medical professional's advice about any supplementation.

#### **Will glucosamine and chondroitin sulphate supplements prevent or repair damage to the cartilage in climbers' fingers?**

Trials have not shown these supplements to be unequivocally useful to repair damage to the cartilage in climbers' fingers although many climbers use these supplements. More studies need to be published before the usefulness of these supplements can be determined. .



## Are the fingers of young climbers different to those of competitive adult climbers?

Yes. Fingers stop growing around age 16 to 17 years, and so training should respect the fact that fingers are still growing. There are no international bouldering competitions for under 16s. The limited amount of studies on the fingers of dedicated young climbers suggest training intensity should be reduced during the adolescent growth spurt to reduce the risk of fractures to the growth plates in the fingers, and other possible finger/s damage. The final growth spurt is around age 13 to 15. This growth period is very obvious if height and weight are regularly plotted on growth charts, or when clothes/shoes are outgrown.

## What should I do to help relieve joint pain in fingers after climbing?

As with any sporting participation, a proper warm up at the beginning of the session and warm down with stretching at end of climb session - including the forearms and fingers - will aid recovery, maintain proper limb functioning, and help prevent injury. Many veteran climbers have fingers that are slightly bent, so they cannot place their hands palm-side down completely flat on a smooth surface – so stretch your fingers out after climbing. The whole musculotendinous unit from elbow to finger tip needs to be stretched not just the fingers. Over stretching of individual joints of the fingers is discouraged as this affects the joint capsule and may (no evidence) encourage less stability under stress.

Crimping holds create the most potential for injury. So if you are training on crimping routes, or simply training intensively (ie more overhangs), your finger pain may be the result of this, so reduce the training load.

The following recovery methods have been used by different countries for the hands specifically, especially after an intensive climbing workout – soak hands



in ice water or apply cold packs to them (even holding a cold drink can), soak in sulphur bath, move fingers or fan them as if playing on a piano, rotate Chinese exercise balls in palm of hand. Painkillers/anti-inflammatory medications are useful as well, but don't make a habit of using them regularly because chronic use of them can lead to other health problems. Be wary of anti-inflammatory medication used in this way – not only because it can mask an overload situation but you also the risk gastro-intestinal problems, namely gastrointestinal bleeding.

### Should I use the campus board to train?

If any campus board training is done, it should only be undertaken by veteran climbers (i.e. climbing around 8 to 10 years), and not those aged up to around 16 or 17 as their fingers are still growing. Such training should only be done when 'fresh'. Know your own limits when doing this type of training, as the potential for injury is greater. Such training is not suitable for all climbers. This is a very intense form of training and intense training should be accompanied by increased rest to allow recovery and adaption.

### Should I buy climbing shoes 1 to 2 sizes smaller than my street wear shoes?

Historically this was the advice, but not now. Today there is a wide variety of climbing shoes available to suit a climber's ability, climbing preferences and foot shape. There are enough studies on climber's feet demonstrating that excessively tight or irregularly shaped climbing shoes can cause acute or permanent pain and various permanent foot deformities and conditions that cannot always be corrected.

A climbing shoe should fit the shape of your foot, and not the other way around – i.e. squeezing your foot into a shoe that doesn't fit. There should be no 'hot spots' where the climbing shoe is rubbing your foot, and there should be no 'dead space' in the shoe. Snug, but not painful! This is very important for



growing feet as marked changes will impact the gait and spinal mechanics detrimentally – and horribly so for some people.

### Will getting thin help me to climb better?

A person's ideal weight is influenced by age, gender, genetics, and the sport. This ideal weight may be slightly different if competing or climbing a major project. Some people are just naturally slimmer. In adults, the estimated amount of body fat that is compatible with human health and performance is 5 per cent in men, and 12 per cent in women.

Good climbers typically have a high strength to body weight ratio, similar to a gymnast, but with exceptionally strong fingers and forearms. There are no scientific studies to prove that losing weight will automatically make you a better climber. In fact there is no data to show what the perfect climbing body type is, or what the perfect body composition (percentage of body fat and muscle) should be for an elite climber, in spite of so much written about it magazines.

If you lose weight too quickly you will lose muscle glycogen, and this depletion is closely related to muscular fatigue. Quick weight loss also increases the risks of illness and injury. Maintaining an excessively lean state may result in other health and performance detriments whether you are an adult or child/adolescent.

It is a smarter and healthier option to build up sport-specific strength and endurance (ie powerful forearms) for both health and performance, rather than losing weight quickly or maintaining low energy diets.

### Is climbing a good exercise for healthy bones?

Bones are not static structures; they are constantly changing in response to exercise, diet, and your age. Climbing is an excellent load-bearing exercise that should encourage very strong remodelling of your bones, and a great physique!



However, if you are excessively lean, your bones may not be as strong as they could be and other aspects of your health may also be adversely affected. For example, a woman's bone mass peaks in her 20's and declines thereafter if not maintained, especially after menopause. If you are eating a low energy diet and/or have minimal body fat, this single opportunity to maximise your total adult bone mass in your mid-20's is reduced and this could be very detrimental to your health.

### Is there anything that should be different in the way a dedicated young climber trains compared to an adult?

Just because some elite young climbers climb similar grades to elite adults does not mean they should train in a similar fashion as they are still growing! Full adult maturation of bones, tissues and organs is not complete until approximately age 19-20 years in females, and age 22-23 in males. Intensive/inappropriate training and/or trying to keep excessively lean can result in full adult developmental growth being delayed, reduced, or in extreme cases never achieved.

The adolescent growth spurt will increase muscle mass (especially in males), and increase the hormone levels needed for putting on muscle and anaerobic training. Bones will widen and lengthen significantly. These combined increases in muscle and bone size will increase total body weight. But remember in order for such growth to happen, connective structures like ligaments and tendons must be weak. These connective structures are two to five times weaker than that of an adult. So a similar force that results in a sprain in an adult will do more damage to an adolescent during this time.

Do not increase finger strengthening exercises or train excessively on routes that place strain on the weaker connective tissues in fingers/upper limbs during this growth spurt. Remember your finger bones are still growing, and the finger



tendons need time to strengthen and adapt to this growth spurt. Remember, climbing should be enjoyed over a lifetime, so train correctly to ensure this is possible.

### How do you use growth charts to adjust training in young athletes?

Every child/adolescent should have their height and weight plotted regularly on growth charts. This is probably the easiest thing anyone can do to monitor the health and development of youngsters. You can ask your doctor for such charts, or download them from the internet.

By regularly plotting a child/adolescent's growth on height and weight charts (i.e. every three months), their developmental growth is clear. If they outgrow their clothes or shoes, growth should be plotted more often, and training adjusted during this period if they are dedicated sports people. If your child's height or weight drops two percentiles (growth lines) on these charts, they may need specialist referrals to investigate the cause.

### What are the early signs of overuse injuries, and how can they be prevented?

**EARLY SIGNS:** Don't ignore pain and see your doctor! Overuse injuries result in pain - pain either when doing certain moves, intermittent or chronic pain, pain that builds up slowly, or pain occurring soon after climbing. Those who climb frequently and/or at a high ability level are more likely to suffer from overuse injuries. Classically it is pain some time after activity, then pain at the start and then after activity, then pain during and after, then pain all the time. Not all overuse injuries manifest themselves this way but many do. Whatever the case - do not wait until you have pain all the time! Deal with it!

**AVOIDING OVERUSE INJURIES:** Avoiding overuse injuries generally requires a methodical and gradual increases in training so that tendon strength can match the loading on newly formed muscles. Muscles can appear in six to



eight weeks of training, but the tendons may take a minimum of two years to adapt to such training.

In terms of tendon injuries by the time the pain is showing up there has already been significant micro-trauma, there is now a big gap between what the tendon is and should be able to tolerate therefore it needs to be addressed appropriately keep overloading and it will tend to degenerate further. The more degenerate the more repair required.

Muscles and tendons can experience some damage at a cellular level in response to training, and this is normal. Good training programmes make allowances for such muscle and tendon tissues to heal, build in strength, and adapt to new training loads. However, if the training is excessive or inappropriate, muscles and/or tendons can become torn or injured. Tendons require much more time and rehabilitation to heal compared to muscles.

Correct training of all relevant and complementary muscle groups involved in climbing can generally prevent overuse injuries. Cranking on routes before your body is up to it can be impressive, but this may contribute to overuse symptoms.

A training diary can be a useful tool to identify the volume and intensity of your training, and how this relates to when/where injuries occurred, and what the symptoms are. It can even identify the lack of rest days needed for recovery! Chronic overuse injuries in climbing are generally limited to the upper body – fingers, elbows, and shoulders. Many overuse injuries are the result of muscle imbalances such as over development of some muscles, while neglecting other muscles like shoulder rotator cuff or forearm extensor muscles. Tendons take time to adapt to training otherwise they can become damaged. The knee is structurally more prone to injury in women, and so some women may suffer more injuries to their knees from doing excessive drop knee moves or rockovers.



It is important to get a proper diagnosis and treatment as soon as possible from someone who understands climbing injuries. Climbers already tend to not to go and see a doctor when injured, and this is very dangerous!

### When should I tape a finger pulley injury (ie A2 pulley), and can I still climb while it is healing?

Get a proper diagnosis first and the right treatment. Generally a fresh single pulley rupture (normally A2) does not require surgical repair, only multiple pulley ruptures do. A single pulley injury can be healed by taping it functionally or by wearing a softcast ring. There should be no climbing between 6-8 weeks, depending on the symptoms.

Other finger injuries may require splinting, taping, ice baths, a local injection of corticosteroids, painkillers, or simply just climbing less intensively using more open-handed holds. Definitely get a proper diagnosis by a skilled doctor with expertise in this area.

### What is a shoulder impingement injury?

There can be many reasons for shoulder pain, and the cause needs a proper medical diagnosis and treatment. Shoulder impingement injuries in climbing are quite common, and may be the result of tendons, rotator cuff or other structures getting 'pinched' from the constant reaching and pulling of overhead holds. You may even hear a 'popping' or 'cracking' noise in your shoulder during such movements. It's possible you may need physiotherapy to promote joint mobility, and to strengthen all the muscles in the shoulder to help deal with the loading and movement they undertake during climbing.

### Why should I keep hydrated during climbing?

There is a fine balance to be struck to keep hydrated, especially during exercise. As the body cannot store fluid or electrolytes before exercise, it is easy to become dehydrated during exercise if fluids are not drunk. Being dehydrated





will impair strength, reaction time, endurance, and concentration. It may also create temporary learning deficits, lethargy, and an electrolyte imbalance will leads to other problems. Not ideal when on sighting or otherwise.

Drinking too much may dilute your body's electrolyte balance and cause other problems.

Every adult needs six to eight glasses of fluid a day if they are not exercising and are not in a hot environment. This drinking should be spaced out throughout the day. If sweating excessively (i.e. sweat 'stings' eyes), it's hot, or the climbing is particularly intense, a sport drink or electrolyte drink may be required to help replace electrolytes, and to top up glucose levels.

### How do I know whether I tore a finger tendon?

This is something you cannot answer for yourself, go and see a physician - preferably one that has an understanding of climbing injuries. But if you suddenly loaded the finger and heard/felt a pop it is quite possible, particularly if the finger swells afterward, this warrants investigation by someone who knows what they are looking at.

